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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,917	09/11/2003	Robert P. Freese	9409-3	8346
<div>7590 05/03/2007</div> <div>Mitchell S. Bigel Myers Bigel Sibley & Sajovec, P.A. P. O. Box 37428 Raleigh, NC 27627</div>				
			<div>EXAMINER</div> <div>CHACKO DAVIS, DABORAH</div>	
			<div>ART UNIT</div> <div>1756</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE</div> <div>05/03/2007</div>	<div>DELIVERY MODE</div> <div>PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/661,917

Applicant(s)

FREESE ET AL.

Examiner

Daborah Chacko-Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-13,15-18,21-30,32-35,38-42, and 44-45 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/06.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1, 3-10, 15-18, 21-27, 32-35, 38-42, and 44-45, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,965,118 (Kodera et al., hereinafter referred to as Kodera) in view U. S. Patent No. 5,620,817 (Hsu) and U. S. Patent No. 6,410,213 (Raguin et al., hereinafter referred to as Raguin).

Kodera, in col 6, lines 5-68, in col 7, lines 1-24, and lines 42-45, in col 8, lines 15-68, in col 9, lines 60-65, discloses forming patterns of optical information recording medium (optical microstructures that are polygonal) by using a flexible substrate (flexible disk), forming a hardenable resin (negative photoresist) that may include additives (photosensitizers, impurities) on the supporting layer (that is transparent to UV radiation, transmits UV light through), and forming the resin on the microstructures (microstructures buried in the liquid resin layer, resin mold), exposing to UV (rastering the UV radiation i.e., scanning the radiation beam) through the transparent flexible supporting layer (substrate), wherein the resin liquid layer thickness is non-uniform (liquid hardenable resin is applied on the uneven surface) and thicker than the pattern on the resin mold, and the

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pattern on the mold is independent of the variable thickness of the resin liquid applied, positioning the substrate on rollers such that resin liquid layer is on the cylindrical platform (roller), and the substrate (transparent supporting layer) is remote from the platform, and is impinged with UV radiation so as to perform an imaging process to form the corresponding pattern that is not distorted (no deformation) on the hardenable resin, and the substrate is conveyed by means of a conveyor (translating the substrate relative to the light), wherein the cylindrical platform (roller) is rotating while rastering axially the radiation (i.e., scanning the radiation) through the transparent supporting layer axially (see figures 5, and 6) (claims 1, 3-10, 16-17, 21-26, 32-33, and 39-41). Koder, in col 8, lines 1-60, and in figures 4A, 4B, and 6, discloses that the microstructure includes a base portion and a top portion such that the top portion is narrower than the base, imaging the hardenable resin with UV to form a microstructure (imaged, cured) in the liquid resin such that the base portion is adjacent to the substrate (transparent supporting layer, see figure 5) (claims 4, and 38). Koder, in col 7, lines 1-12, and in col 8, lines 34-37, discloses forming a hardenable resin liquid (negative photoresist layer) on the uneven pattern of the information to be recorded, followed by hardening (exposure) and developing to form the resin mold (microstructure master) (claims 15, 34, and 44). Koder, in col 6, lines 7-67, in col 7, lines 1-24, in col 8, lines 32-53, and in figures 1-8, discloses that the resin mold (master microstructure) is used to form stampers (second generation stampers), and the stampers are used to form microstructures (third generation microstructures) (claims 18, 35, and 45).

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The difference between the claims and Koderá is that Koderá does not disclose that the radiation beam amplitude is varied (claims 10, 27, and 42).

Hsu, in col 3, lines 15-35, discloses that the intensity of the exposure light is adjusted during the exposure process (i.e., constantly adjusting the intensity of light is same as varying the amplitude of the exposure beam impinged).

The difference between the claims and Koderá in view of Hsu is that Koderá in view of Hsu does not disclose that the optical microstructures formed are an array of microlenses and that the microstructure master is a microlens array master.

Raguin, in the abstract, in col 6, lines 18-24, and lines 64-68, and in col 7, lines 1-7, discloses that the method of forming the claimed microstructures be used to form an array of microlenses.

Therefore, it would be obvious to a skilled artisan to modify Koderá by employing the method of varying the intensity of the exposure light during exposure as taught by Hsu because Hsu, in col 3, lines 20-32, discloses that the intensity of the light exposure is adjusted so as to control the amount of exposure in the regions to be exposed and to block the light from exposing undesired regions of the negative photoresist layer. It would be obvious to a skilled artisan to modify Koderá in view of Hsu by employing the suggestion of Raguin by using the method of forming microstructures such as microlens array and using the microstructure master as a microlens master because Koderá teaches forming the microstructures (desired pattern) in optical media substrates, and Raguin, in the abstract, discloses that the optical microstructures formed can be either

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microlenses or gratings and Raguin, in col 6, lines 63-67, in col 7, lines 1-8, and in col 8, lines 55-57, discloses that the microstructure in the photosensitive material (photoresist) is transferred to the underlying substrate, and the formed microstructure can be replicated (i.e., the microstructure master can be a microlens master) by embossing or molding etc., to form structures that includes microlenses, and that such a pattern formed can also be used to form any optical element for optical interconnects and communications.

3. Claims 11-13, and 28-30, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,965,118 (Kodera et al., hereinafter referred to as Kodera) in view U. S. Patent No. 5,620,817 (Hsu) and U. S. Patent No. 6,410,213 (Raguin et al., hereinafter referred to as Raguin) as applied to claims 1, 3-10, 15-18, 21-27, 32-35, 38-42, and 44-45 above, and further in view of U. S. Patent No. 4,087,300 (Adler) and U. S. Patent No. 5,342,737 (Georger, Jr. et al., hereinafter referred to as Georger).

Kodera in view of Hsu and Raguin is discussed in paragraph no. 2.

The difference between the claims and Kodera in view of Hsu and Raguin is that Kodera in view of Hsu and Raguin does not disclose that the substrate is about a square foot, and that the radiation is impinged for about an hour.

Adler, in col 7, lines 45-54, discloses that the flexible substrate is approximately about 100 feet to about 1000 feet (i.e., an area of at least one square feet) (claims 11, and 28). Adler, in col 8, lines 46-65, discloses that the resin is cured for more than an hour (claims 12-13, and 29-30)

The difference between the claims and Koderia in view of Hsu and Raguin further in view of Adler is that Koderia in view of Hsu and Raguin further in view of Adler does not disclose that at least about one million microstructures are fabricated.

Georger, in col 11, lines 45-55, discloses that batches per exposure produce at least about 730 million microstructures (microcylinders).

Therefore, it would be obvious to a skilled artisan to modify Koderia in view of Hsu and Raguin by employing the substrate parameters and resin cure time suggested by Adler because Adler, in col 8, lines 46-68, discloses that curing the resin coated plastic substrate of the claimed length on a mandrel for the claimed time ensures a well bonded resin layer with excellent resistance to organic solvents, and blistering, and in col 7, lines 45-57, discloses that the size of the plastic substrate to be rolled on the mandrel is not critical and is based on only the capabilities of the equipment at hand. It would be obvious to a skilled artisan to modify Koderia in view of Hsu and Raguin further in view of Adler by employing the method of making at least millions of microstructures as suggested by Georger because Georger, in col 7, lines 51-68, discloses that the support structure (substrate) may be of any shape or size and is depended upon the intended use of the array of microstructures to be formed on the support surface, and Georger, in col 11, lines 10-40, discloses that the millions of microstructures formed enables the use of the resultant product to used as electron emitters or as carriers for the controlled release of active agents (microsyringes, microvials etc).

Response to Arguments

4. Applicant's arguments filed January 30, 2007, with respect to claims 1, 3-10, 15-18, 21-27, 32-35, 38-42, and 44-45, have been considered but are moot in view of the new ground(s) of rejection.

A) Applicants argue that Hsu does not teach forming microlenses and that the radiation beam used for exposure is not scanned at varying amplitudes.

Hsu is not depended upon to disclose the formation of microlenses using scan exposure techniques. However Hsu is depended upon to disclose varying amplitudes of the exposure beam, (i.e., the radiation beam). Hsu teaches that during the exposure process the exposure intensity of the beam is adjusted i.e., the amplitude is varied. See paragraph no. 2.

B) Applicants argue that Koderer does not disclose i) fabricating an array of microlenses, ii) performing an exposure by scanning the radiation beam, and iii) varying the amplitude of the exposure beam.

Koderer is not depended upon to disclose the fabrication of microlens array. However Koderer teaches the method of forming optical microstructures in optical media. Ragun is depended upon to disclose the formation of optical microstructures such as microlenses. Koderer teaches that the laser beam is focused and irradiated via a lens i.e., the laser is rastered axially onto the surface to be exposed i.e., Koderer teaches performing a scanning exposure. Koderer is not depended upon to disclose varying the amplitude of the exposure beam. Hsu is depended upon to disclose varying the amplitude of the exposure beam. See paragraph no. A).

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.**

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

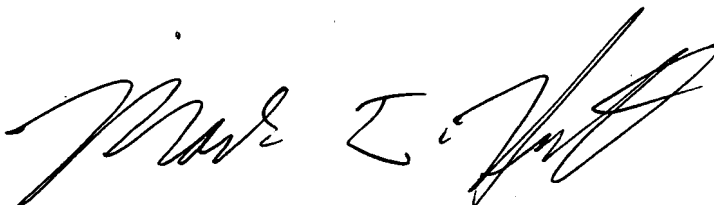
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from

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either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd


April 26, 2007.



MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700